

**WE
LOVE
OUR
CUSTOMERS**

PROTECTO ENTERPRIZES

Exclusively COM 64 & VIC 20
Box 550
Barrington, Illinois 60010
(312) 382-5244 To Order

BASIC AID



**RICHVALE
TELECOMMUNICATIONS**



RTC BASIC AID 64

A Program Development Tool
For the BASIC Language

Program written by Troy Hacker

Manual by Marc Swanson

Copyright: Richvale Telecommunications
10610 Bayview Avenue
Richmond Hill, Ontario
CANADA L4C 3N8
Tel. (416) 884-4165

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX TILDEN FOUNDATION
455 FIFTH AVENUE, NEW YORK 17, N. Y.

Acquired by the Library of the City of New York

Gift of the City of New York

Acquired by the Library of the City of New York

Gift of the City of New York

Acquired by the Library of the City of New York

Gift of the City of New York

Acquired by the Library of the City of New York

The Basic Aid program was written by Troy Hacker

This manual was written by Marc Swanson

COPYRIGHT

The computer programs on the Basic Aid program disk and those described in this manual are copyright by and contain proprietary information belonging to Richvale Telecommunications.

No one may copy, photocopy, reproduce, translate this manual or reduce it to machine readable form, in whole or in part, without the prior written consent of Richvale Telecommunications.

No one may give or sell copies of the disk or of this manual or of the listings of the programs on the disk to any person or institution, except as provided for by written agreement with Richvale Telecommunications.

WARRANTY AND LIABILITY

Neither Richvale Telecommunications, nor any person distributing this product, makes any warranty, express or implied, with respect to this manual, the Basic Aid program, or any related items, their quality, performance, merchantability, or fitness for any use. It is the responsibility solely of the purchaser to determine suitability of these products for any purpose.

In no case will Richvale Telecommunications be held liable for damages direct, indirect or incidental resulting from any defect or omission in the manual, the program, the disk or other related items and processes, including but not limited to, any interruption of service, loss of business, anticipated profit or other consequential damages.

This statement of limited liability replaces all other warranties or guarantees, express or implied, including warranties of merchantability and fitness for any purpose. Richvale Telecommunications neither assumes any other warranty or liability nor authorizes any other person to assume any other warranty or liability for it, in connection with the sale of its products.

UPDATES TO THE PROGRAM AND MANUAL

Richvale Telecommunications reserves the right to correct and/or improve this manual and the related disk at any time without notice and without responsibility to provide those changes to prior purchasers of the program.

For information, contact:

Richvale Telecommunications
10610 Bayview Avenue
Richmond Hill, Ontario
CANADA L4C 3N8

RTC BASIC AID 64

TABLE OF CONTENTS

SECTION 1 LOADING AND USING BASIC AID

1.1 Before You Load Basic Aid	4
1.2 Loading Basic Aid 64	4
1.3 Using Basic Aid 64	5
1.4 Using This Manual	6

SECTION 2 EDITING COMMANDS

2.1 On/Off Commands	7
2.2 Line Numbering Commands	8
2.3 String/Variable Commands	11
2.4 General Editing Commands	13
2.5 Editing with the Function Keys	16

SECTION 3 DISK COMMANDS

3.1 Disk and File Handling	18
3.2 Reading Files	20
3.3 Pattern Matching	21
3.4 Using Disk Commands	22

SECTION 4 PRINTER COMMANDS

4.1 Using Your Printer	24
4.2 Printing Data	25

SECTION 5 ERROR MESSAGES

RTC BASIC AID COMMAND SUMMARY	29
-------------------------------	----

SECTION 1 LOADING AND USING BASIC AID

1.1 BEFORE YOU LOAD BASIC AID

The Basic Aid 64 program is a BASIC language program development tool. Basic Aid 64 will not help you to learn BASIC but once you know the language, this program will help you to write programs more effectively and with greater speed.

NOTE: The Basic Aid 64 Program Disk

The program disk you received with your package is "disk locked". You will not be able to make backup copies of this disk or to save the Basic Aid 64 program to any other disk. Do not attempt to save any other programs to the Basic Aid 64 program disk. Never, under any circumstances, remove the write protect tab over the notch in the top right corner of the disk. If this tab comes off accidentally, replace it before reloading the program.

1.2 LOADING BASIC AID 64

1. Normal Loading

To load the Basic Aid program, put your computer in BASIC. Insert the program disk in drive 0. (With a single disk drive, you only have drive 0.) Type:

LOAD "0:*",8 <RETURN>

The screen will display the messages, "SEARCHING FOR 0:*" and "LOADING". When the cursor returns to the screen and the word "READY" appears, enter:

RUN <RETURN>

While the program initializes, a full screen color display will stay on the screen. When the cursor reappears, Basic Aid 64 is ready to use.

2. Fast Loading

To load the program more quickly, enter:

LOAD "LOADER.2",8,1 <RETURN>

Use this load command to bypass the full-color Basic Aid display.

3. Loading Problems

If you experience any difficulties loading the program, you may need to initialize the disk. With your computer still in BASIC, enter:

OPEN1,8,15,"10" <RETURN>

The disk should spin briefly while the drive reads the disk ID. Try loading again.

1.3 USING BASIC AID 64

As you work with Basic Aid 64, keep the following points in mind:

- 1) To execute Basic Aid commands, enter the command then press the <RETURN> key just as you would with normal BASIC.
- 2) The Commodore 64's BASIC allows you to enter commands in two ways: program mode and immediate mode. In immediate mode, a command is executed as soon as you press <RETURN>. In program mode, commands are assigned line numbers and execution is delayed until you enter the "RUN" command. Most Basic Aid 64 commands can be used only in immediate mode. Any commands that can be used in program mode are noted in the text.
- 3) Basic Aid commands can be abbreviated, just as BASIC keywords can, by shifting certain letters. Basic Aid treats abbreviations in alphabetical order. For example, if you enter "C", this will be understood as the "CATALOG" command. If you enter "ch", this will be understood as the "CHANGE" command.
- 4) Basic Aid is meant to work only with BASIC programs. If you load Basic Aid and try to work with a program that is part BASIC, part machine language, Basic Aid will not work as expected. If your computer "hangs", you may hold down the <RUN/STOP> key and press <RESTORE> to get the cursor back.
- 5) While using a command that alters memory, such as the "MOVE" or "NUM" commands, you may also press <RUN/STOP> and <RESTORE> in the middle of execution. However, this will virtually destroy the BASIC program in memory. Use the "NEW"

command to clear the program from memory after a <RUN/STOP> and <RESTORE>.

1.4 USING THIS MANUAL

In this manual, the Basic Aid 64 commands have been broken down into several groups, such as disk commands, editing commands, printer commands and so on. The syntax of each command is given, followed by a brief explanation of how to use the command, along with one or two examples and what those examples will do. To use the syntax line given in each command, remember the following:

- 1) The Commodore 64 has two character sets: upper/lower case, and upper/graphics case. To toggle between the two character sets, hold down the <SHIFT> key and press <C=>. In this manual, the syntax for Basic Aid 64 commands is given in capitals, as if the computer were always in upper/graphics case. Do not hold down <SHIFT> to type in these capital letters.
- 2) Enter capital letters shown in the syntax lines exactly as they are shown. Punctuation symbols, such as commas and slashes, should also be entered exactly as shown.
- 3) Any words printed in lower case in the syntax lines for each command should be replaced by variable names or numbers. For example, if you see "expression" or "start#", they indicate that an expression or a number should be entered, not the words, "expression" or "start#".

SECTION 2 EDITING COMMANDS

2.1 ON/OFF COMMANDS

1. Disable Basic Aid

Once you have loaded Basic Aid and used it to edit a program, you may find that you wish to disable the Aid temporarily. Use the KILL command.

SYNTAX: KILL

To restart the Aid, enter:

SYS700

and the computer will display "READY". Any program that may have been in memory will be cleared. But you can bring it back into memory with the "OLD" command (covered next).

2. Recover a BASIC Program

If you enter the command "NEW", you will clear a BASIC program from memory. However, you may not have saved the program to disk. To put the program back into memory, use the OLD command.

SYNTAX: OLD

The BASIC program cleared by NEW will be restored to memory.

3. Warm-Start

To return your computer to power-up condition, that is the condition it was in when you first turned it on, use the RESET command.

SYNTAX: RESET

This command has the same effect as "SYS64738". Any program that may have been in memory is cleared.

2.2 LINE NUMBERING COMMANDS

1. Automatic Line Numbering

As you type BASIC program lines in program mode, use the AUTO command to make the computer supply the next line number, in whatever increment you decide.

SYNTAX: AUTO#

where "#" is the increment (value from 1 to 255). For example, you might enter AUTO with an increment value of 10. Then enter the first line of the program, starting with any line number, "10" for example. When you press <RETURN> at the end of that line, the number "20" will appear and the cursor will be correctly positioned to type the next program line.

To turn automatic line numbering off, enter "AUTO" with no increment.

2. Delete Program Lines

The DEL command deletes the specified range of lines from a BASIC program.

SYNTAX: DEL line range

For example, if you enter DEL100-200, then the BASIC lines from 100 to 200 inclusive would be removed from the program in memory. This is a true delete; you will not be able to recover these lines using the OLD command.

3. Merge BASIC Programs

Use the MERGE command to merge a BASIC program in memory with another BASIC program on disk.

SYNTAX: MERGE "filename"

where "filename" is the name of the BASIC program on disk.

This command treats the disk program as if you were typing in its line numbers at the keyboard. If there is a line 50 in both programs,

then the line 50 from the program on disk will replace line 50 in the program in memory. Lines are displayed while they are being merged. Lines longer than 80 tokenized characters are truncated to 80 characters by the MERGE command.

NOTE: See Section 3.4 for more on using the MERGE command.

4. Renummer BASIC Program

As you are typing a BASIC program, you may find you need more line numbers than you have left in your standard increment. You can use the NUM to renumber the lines of a BASIC program to expand or reduce the increment between each line. You may renumber all or any part of a program.

SYNTAX: NUM start#,incr#,line range

start# = first line for renumbering
incr# = increment number
line range = lines included in renumbering

For example, if you were working on a program where each line increments by 10, this may not leave you enough room to edit and add lines. To renumber the whole program to increment by 20, you would enter:

NUM10,20,

The renumbering starts at line "10" of the old program, changing the increment to "20". The NUM command automatically changes all GOSUB's and GOTO's in the program to refer to the new line numbers. As the renumbering takes place, the program will display the new line numbers of the GOSUB's and GOTO's.

If you do not specify a line range, the whole program will be renumbered. If you do not specify a first line, the first line of the new program will be 1000. If you do not specify an increment number, Basic Aid will increment all lines by 10.

NOTE: In BASIC, no line can have a number greater than 63999. Before the program rennumbers any lines, it will check to make sure the renumbering will not give one of the lines a number of 64000 or greater. If the error message, "ILLEGAL QUANTITY ERROR" occurs

when you type the NUM command, then the renumber will not take place with the values you are using.

5. Relocate BASIC Lines

To relocate a range of BASIC program lines to another location in the program, use the MOVE command. The MOVE command includes a "renumber" command. When you use MOVE, it will renumber your entire BASIC program to reflect the changed line numbers caused by the move.

SYNTAX: MOVE dest#,line range,start#,incr#

dest# = new starting line for moved lines
line range = program lines to be moved
start# = first line number of the program
incr# = new increment number for program lines

For example, if you want to relocate lines 100-200 from a program that increments by 10 to start at line 1300 with an increment of 20, you would enter:

MOVE 1000,100-200,1300,20

This example would renumber the entire program. The first line of the new program would be 1000. Lines 100-200 would move to start at line 1300. The new increment number would be 20.

As the program moves lines of BASIC, it rennumbers all GOSUB's and GOTO's to reflect the new lines. These new line numbers will be displayed while the move is being done.

Before Basic Aid executes a MOVE command, it checks through the BASIC program for two things.

- 1) If a program line has more than 80 tokenized characters, the MOVE will not take place. Instead, Basic Aid will display the error message, "LINE TOO LONG ERROR" along with the line number where that error occurred.
- 2) Like NUM, the MOVE command checks through the program to make sure that no line will be assigned a number higher than 63999. If a MOVE would make that error, then it will not take place and Basic Aid will return an "ILLEGAL QUANTITY ERROR".

2.3 STRING/VARIABLE COMMANDS

1. List Variables in a Program

To list all the variables used in the BASIC program in memory, use the DUMP command.

SYNTAX: DUMP

If you break into a running BASIC program with the <RUN/STOP> key, you can use the DUMP command to display the values for all variables used in the program up to that point. Current values will be displayed. Only variables used to that point are displayed with the DUMP command. If a variable has not yet been used or defined, it will not be displayed.

The variables will appear down the left side of the screen with their current values displayed to the right. You may edit or change the value for a variable directly on one of these lines. If you edit one example, it will change all occurrences of the same variable in the program. For example, you could stop a running program to DUMP the variables. If you then change one or more variables to new values, you may use the CONT command to continue the program with those new values.

2. Find Text

To locate the occurrence of a given string, use the FIND command.

SYNTAX: FIND/string/,line range

string = the item of search text
line range = the lines to be searched
to be searched
to be searched
string/,line range

string = the item of search text
line range = the lines to be searched

For example, to find every occurrence of "A\$" in lines 200-300, you would enter:

FIND/A\$,200-300

and the program would display every line where "A\$" occurs between 200-300. If you do not specify a line range, the FIND command will search through the whole program.

NOTE: The BASIC programming language "tokenizes" command words. For example, if you use the letters "GO" as a command in a program, BASIC will shorten the command to one byte. However, if you use the word "GO" inside quotation marks or after a REM or DATA statement, BASIC will not tokenize it, and it will occupy 2 bytes. This can lead to problems in using the FIND command.

If you enter **FIND/GO/**, then Basic Aid will find every tokenized "GO" in the program. However, it will not find any non-tokenized occurrences of the word "GO", that is, occurrences of "GO" inside quotation marks or in REM or DATA statements. To FIND non-tokenized occurrences of a given string, enclose the string inside quotation marks or periods. To find non-tokenized occurrences of "GO", you could enter **FIND "GO"**. You may also use periods, commas or any other character, so long as you use the same character before and after the string.

3. Search and Replace Text

Use the CHANGE command to search through a BASIC program for a given string and replace it with another string.

SYNTAX: CHANGE/old\$/new\$/line range

For example, to change the value of "A\$" in lines 100-300 from "IBM PC" to "COMMODORE 64", enter:

CHANGE/IBM PC/COMMODORE 64/,100-300

As the program finds and changes a line with the old string, that line will be displayed. If you do not specify a line range, the old string will be replaced by the new string throughout the whole program. The CHANGE command will not work on any variables in a line with more than 250 characters.

NOTE: You will have the same problem with tokenized BASIC lines with this command as with the FIND command. Use periods or some

other character to enclose the string if you have any difficulty finding and changing it.

2.4 GENERAL EDITING COMMANDS

1. Display Error

Use the HELP command to find the BASIC line where an error occurred.

SYNTAX: HELP

The program will locate the line where the BASIC programming error occurred. That line will be displayed, and the portion of the line causing problems will be highlighted.

2. Convert to Different Bases

Use the HEX command to convert a number from one base to another, among hexadecimal, decimal and binary numbers.. The HEX command will convert a number in one of these bases, displaying the number in all three. This command is useful for figuring SYS, POKE and PEEK numbers.

SYNTAX: HEX#

Use a dollar sign for hexadecimal numbers, for example "\$E000". Use a percent sign for a binary number, for example "%100101". Enter decimal numbers as usual.

You may add or subtract numbers of different bases with the HEX command. For example, HEX 10+%11101-\$f0. However, no number may contain more than 16 digits. If an overflow occurs in adding numbers, the result will "wrap around". For example, if you enter HEX \$ffff+1, the answer will be "\$0000".

3. Change Screen Colors

Use the COLOR command to alter the background, border and text colors on screen.

SYNTAX: COLOR#,#,#

The first "#" changes the color of the screen background; the second "#" changes the border while the third "#" changes the cursor and text. Acceptable values for "#" range from 1 to 255. To leave the text color the same, omit the last "#". To leave the text and border colors the same, omit the last two "#" values.

4. Program and File Size

To find the size of a program in memory or a file on the disk, use the SIZE command.

SYNTAX: SIZE ("filename")

To find the size of the program in memory, enter the SIZE command alone. To find the size of a program on disk, enter the "filename" after the SIZE command, enclosed in quotation marks.

SIZE displays the program's START and END locations on the screen. The size of a disk file is given in bytes. All locations are given in both hex and decimal. This command is only accurate to 16 bits; after 16, the program counter will wrap around in the same way as the HEX command.

5. Tracing BASIC Programs

The TRACE command allows you to view the line of a BASIC program that is currently being executed while the program is running.

SYNTAX: TRACE (#)

The values for "#" range from 1 to 255. The closer to "255", the slower the TRACE command will work. (You may increase to maximum speed by holding down the <SHIFT> key.)

To use the TRACE command, enter TRACE with a speed value. Then RUN the program in memory. The program will run as before except that the top two lines of the screen will display the line of BASIC code currently being executed.

To disable the TRACE command, enter TRACE without a number.

6. Scrolling

You may scroll through the lines of a BASIC command at either the top or the bottom of the screen through the <CRSR> up/down key. Use the <HOME> key to send the cursor to the top position on the screen for scrolling down. Use <f 7> to send the cursor to the last screen line for scrolling up. Scrolling is possible with the TRACE command turned on.

NOTE: If you have loaded a BASIC program with some machine language in it, scrolling will not work at the top of the screen. The computer will lock up. To return the cursor to the screen, hold down <RUN/STOP> and press <RESTORE>. Use Basic Aid's "OLD" command to remove the machine language from the program. However, if you then resave the program to disk, only the BASIC will be saved, not the machine code.

7. Leading Spaces

Commodore BASIC does not normally allow leading spaces. If you enter a program line number and leave 10 spaces before you enter any data, BASIC will delete those "leading spaces".

However, for structured programming, leading spaces are essential. Use the "LS" command to enable and disable leading spaces.

SYNTAX: LS

Enter "LS" once to turn leading spaces on. Enter "LS" again to turn leading spaces off. Use the STATUS command (see Section 4.1/3) to check whether leading spaces are on or off.

NOTE: Leading spaces will appear in a TRACE.

8. Pause/Abort Editing Commands

Many editing commands which display data on the screen, such as DUMP, MERGE, CHANGE and FIND, can be paused or aborted. To pause the command, press the space bar. To resume, press the space bar again. To abort the command, press the <RUN/STOP> key.

2.5 EDITING WITH THE FUNCTION KEYS

The grey function keys located to the right of the main keyboard on the Commodore 64 provide several valuable editing features.

1. Tab: <f 1> and <f 2>

The top function key is used for tabbing the cursor. To set a tab, position the cursor where you want the first tab position to be. Press <f 2> (hold down <SHIFT> and press <f 1>). To tab the cursor to that position, press <f 1>. If you press <f 1> without setting any tabs, the cursor will jump to the last screen column.

You may have up to 80 tabs on screen at one time. On a 40-character line, you may use only 40 of them, while all 80 could be used on an 80-character line.

To cancel a tab stop, reposition the cursor under the tab position and press <f 2> again. To cancel all tabs, use the "CLEAR" command.

SYNTAX: CLEAR

You may then reset any tabs you wish.

2. Deleting Text: <f 3> and <f 4>

Press the <f 3> key to erase text from the cursor to the end of a program line. The cursor will not move, but the character under the cursor will be erased.

Press <f 4> to erase text from the beginning of a program line to the cursor. Again, the cursor will not move, and the character under the cursor will be erased.

Until you press <RETURN> on the BASIC program line, these changes are not made to the program in memory.

3. Insert Mode: <f 5> and <f 6>

Press <f 5> to put the computer into "Insert" mode. As you type, text will move ahead of the cursor to make room for the text you are typing. Press <f 6> to cancel Insert mode.

4. Cursor movement: <f 7>

Use <f 7> as a sort of "reverse Home" key. Press the <f 7> key once to send the cursor to the first position of the last line on the screen.

5. Escape quote mode: <f 8>

After you enter the quotation character ("), any cursor commands following it are taken by Commodore BASIC as programmed cursor commands. They will appear on the screen as graphics characters. This can be useful for programming cursor movement, but it can also be a nuisance. To escape from this quote mode, press the <f 8> key and the cursor keys will function normally.

SECTION 3 DISK COMMANDS

3.1 DISK AND FILE HANDLING

1. Disk Directory

Use the CATALOG command to view the directory of the contents of a disk.

SYNTAX: CATALOG (Dx)

The "x" in the syntax refers to the drive number, usually "0" or "1". If no drive number is included, the CATALOG command will read the disk in all drives (Unit 8). The CATALOG command allows pattern matching (see Section 3.4).

2. Disk Status

Use the DISK command to read the error channel and print the disk status to the screen.

SYNTAX: DISK

This is the equivalent of "PRINT DS\$" in BASIC 4.0. See your drive manual for more on Disk Operating System Errors and how to recover from them.

3. Disk Commands

You can also use the DISK command to introduce file and disk handling commands with BASIC 2.0 syntax.

SYNTAX: DISK string

Used with a string, DISK functions in the same way as the "OPEN1,8,15" command.

EXAMPLES:

DISK "NEW0:FIRSTDISK,12"

would format (header) the disk in drive 0, giving it the name

"FIRSTDISK" and an Identifier of "12".

DISK "SCRATCH1:UNWANTEDFILE"

would scratch the file called, "UNWANTEDFILE" from the disk in drive 1.

DISK "RENAME0:NEWFILE:OLDFILE"

would rename the file on drive 0 called "OLDFILE" to "NEWFILE".

DISK "COPY1:MYFILE=0:MYFILE"

would copy the file "MYFILE" from drive 0 to drive 1.

DISK "VALIDATE0"

would validate the disk in drive 0.

DISK "DUPLICATE0=1"

would duplicate (backup) the contents of the disk in drive 1 to the disk in drive 0.

DISK "INITIALIZE1"

would initialize the disk in drive 1.

DISK "COPY0:NEWFILE=0:FILE1,FILE2"

would copy and concatenate the files called FILE1 and FILE2 into one file called "NEWFILE".

NOTE 1: All of the above commands can be written using only the first letter in the command. For example, DISK "I0" would "initialize" the disk in drive 0; DISK "V1" would "validate" the disk in drive 1; and so on. For more information on these commands, see your drive manual.

NOTE 2: A maximum of four files can be specified in one scratch command, or one copy/concatenate command.

3.2 READING FILES

1. Loading a Program

To load a BASIC program from the disk, use the GET command.

SYNTAX: GET "filename"

Enclose the "filename" inside quotation marks.

When you list a directory, or catalog the disk, the program names will appear on screen with their file types - program, relative and sequential. Normally, you must erase the file type before you can load a program. With the GET command, you do not need to erase the file type. Enter "GET" at the beginning of the line and press <RETURN>.

NOTE: You may also use the GET command by typing the initial "G" while holding down the <SHIFT> key.

2. Load and Run a Program

To load and at the same time run a BASIC program from disk, use the DRUN command.

SYNTAX: DRUN "filename"

Enclose the "filename" inside quotation marks.

3. Reading Sequential Files

To read a sequential or user file from disk to the screen, use the READ command.

SYNTAX: READ "filename"

Enclose the "filename" inside quotation marks. This command will only work on files with "SEQ" or "USR" listed as their file type.

Use the "CMD" command to redirect this output to a printer instead of to the screen. For example, if you enter:

OPEN4,4:CMD4 <RETURN>

followed by:

READ "MYFILE" <RETURN>

then the contents of "MYFILE" will print to the printer instead of to the screen. When the printout is finished, make sure you close the channel to the printer by entering:

PRINT#4:CLOSE4

4. Load the First Program

If you hold down the <SHIFT> key and press <RUN/STOP>, Basic Aid will load the first program from drive 0 of unit 8. These keystrokes are the equivalent of: **LOAD "0:*",8.**

5. List a File to the Screen

Use the "FLIST" command to list the lines of a program directly from the disk to the screen without affecting the contents of memory.

SYNTAX: FLIST "filename"

where "filename" is the name of the program file on the disk, enclosed in quotation marks. The program listing will appear on the screen, but the program in memory will not be cleared or changed in any way.

6. Pause/Abort Disk Commands

Any disk commands which read to the screen, such as CATALOG, READ, and FLIST, can be paused with the space bar. To resume printing to the screen, press the space bar again. To abort the command, press <RUN/STOP>.

3.3 PATTERN MATCHING

1. Pattern Matching

Commodore Disk Operating System allows you to use two special

characters in file handling commands: the "*" and the "?". Use the "*" to indicate that the rest of the name is insignificant. Use the "?" to indicate that the character in that position is insignificant. The asterisks and question marks you use to identify several files using the same command is called the "pattern".

For example, a series of files on a disk called, "FILE1", "FILE2", "FILE3" and so on could all be represented by the one string, "FILE*". The "*" shows that whatever comes after the first four characters, "FILE" is not important. If you had another series of files on the disk called, "AFILE", "BFILE", "CFILE" and so on, they could all be represented by "?FILE". In this case, the character in the first position does not matter. However, "**FILE?" would not make sense, because the characters after the "*" are insignificant.

2. Using Pattern Matching

You may use pattern matching in the CATALOG command. To find all the program files on a particular disk in drive 0, you would enter: CATALOGD0,"*=PRG". To find all the sequential files, enter: CATALOGD0,"*=SEQ". Use "REL" for relative files and "USR" for user files.

You may also use pattern matching with the DISK command to scratch or copy multiple files. Up to four files may be included in one scratch or one copy command. Be careful with using pattern matching to scratch files, as it could result in unintentionally deleting a wanted file. See your drive manual for more on pattern matching.

NOTE: With the CATALOG command, you only need to enter the first letter of the type of the file you want to see. For example, to view the names of sequential files on drive 0, enter: CATALOGD0,"*=S". Use "P" for program files, "R" for relative files and "U" for user files.

3.4 USING DISK COMMANDS

You may use Commodore BASIC 4.0 syntax with the following disk commands: DISK, CATALOG, FLIST, MERGE, READ and SIZE.

In these commands, you may specify drive numbers, unit numbers and file types. With some commands, such as MERGE or FLIST, you can specify a line range. These features can occur in any order except the line range, which must be last.

For example, if you enter:

SIZE "PROGFILE", D0, U8

then Basic Aid will display the size of the file called "PROGFILE" on Drive 0 of Unit 8. If you enter:

MERGE D1 ONU9, "PROGFILE", PRG, 100-400

then Basic Aid would search for the PRG file called "PROGFILE" on drive 1 of Unit 9. Lines 100 to 400 would be merged with the program currently in memory.

You can use variables for drive number, unit number or file name. However, the variables must be enclosed in parentheses.

SECTION 4 PRINTER COMMANDS

4.1 USING YOUR PRINTER

Before you can use the printer commands shown later in this section, you must first define some of your printer's characteristics for Basic Aid.

1. Commodore or ASCII

For listing a program, Basic Aid treats all printers as either Commodore or ASCII printers. Basic Aid defaults to using a Commodore printer. To print through any other type of printer, use the ASCII command.

SYNTAX: ASCII

If you enter "ASCII" once, Basic Aid will treat your printer as an ASCII (non-Commodore) printer. Enter "ASCII" again to return to using a Commodore printer. You can check which type of printer you have selected with the "STATUS" command (see Section 4.1/3).

2. Line Feeds

When the print head returns to the left margin of the page to begin a new line, the paper in the printer should advance by one line. Some printers need the computer to tell them to advance the paper. They require line feeds from the computer. Other printers will advance the paper without a command from the computer. They do not require line feeds. To send line feeds from the computer to the printer, use the "LF" command.

SYNTAX: LF

Enter "LF" once to turn line feeds on. Enter "LF" again to turn line feeds off. You can check line feeds with the "STATUS" command, described next.

3. Status

Use the "STATUS" command to check whether or not the following are enabled or disabled: 1) line feeds; 2) leading spaces; 3) ASCII

printer. The STATUS command will also tell you which key is currently being used for the "KEY" command (see Section 4.2/3).

SYNTAX: STATUS

When you enter the STATUS command, the screen will display the features noted above, and whether they are turned on or off.

4. Printing Data

After you have opened a command channel to the printer, you can get a hard copy with the following Basic Aid commands: FLIST; CATALOG; READ and HELP. For example, to get a hard copy of your disk directory, you could enter:

```
OPEN 4,4 <RETURN>
CMD 4 <RETURN>
CATALOG <RETURN>
```

4.2 PRINTING DATA

1. List to Printer

To get a hard copy of the program listing in memory, use the PLIST command.

SYNTAX: PLIST "title",line range

Before you use this command, you should use the "LF" and "ASCII" commands (see the previous subsection) to define the characteristics of your printer. PLIST prints on 60 of the 66 lines on a page, printing the "title" at the top of the page, along with the page number.

With an ASCII printer, PLIST will print in upper case if the computer is in upper/graphics mode; or upper/lower case if the computer is in upper/lower case. With a Commodore printer, check your printer manual for more on getting upper/lower case.

2. Screen Dump

To get a hard copy of the current contents of the screen, use the CRT command.

SYNTAX: CRT

With a CBM (Commodore) printer, the screen will print exactly as you see it. With an ASCII printer, the text will appear in the same way as with the PLIST command.

3. Key Print

Basic Aid's key print feature allows you to print the contents of a screen while a program is running.

SYNTAX: KEY

Enter KEY once to turn this feature on. Enter KEY again to turn it off. To define the key which will be used with this command, use the KEY command again.

SYNTAX: KEY = ?

? = the character you choose

If no key is specified, Basic Aid defaults to using the slash key ("/").

When you turn KEY on, you can print the contents of the screen at any point, even while a program is running. Press the key you have defined as the KEY character to dump the contents of the screen to the printer.

SECTION 5 ERROR MESSAGES

Commodore's BASIC generates error messages when you misspell a command word, or use a command in the wrong way. See your owner's manuals for more on error messages and how to recover from them. RTC Basic Aid also uses error messages to tell how or if you have misused a command. Basic Aid uses both Commodore's error messages, and some of its own.

1. Illegal Quantity Error

The Illegal Quantity Error appears if you enter a parameter such as a null file, for example: GET "".

This error message can also appear in the MOVE or NUM commands. If either of those commands results in a program line being assigned a number greater than 63999, Basic Aid will return an Illegal Quantity Error.

2. Line Exists Error

One of the parameters in the MOVE command sets the "destination number", the starting line number for the new position of the lines of code. If the destination number already exists in the program, Basic Aid will return a Line Exists Error.

3. Line Too Long Error

Before executing a MOVE, Basic Aid looks through the entire program. If it finds any line longer than 80 tokenized characters, the MOVE will not take place. Instead, Basic Aid will display a Line Too Long Error message, along with the line number.

4. No Range Error

The No Range Error occurs when you specify a line range incorrectly. For example, if you used the "DEL" command to delete a range of lines that does not exist in the program, Basic Aid will return a No Range Error.

5. Not Basic Error

The Not Basic Error occurs when you use a disk command to read a file which is not a BASIC program file. For example, if you try to "FLIST" a sequential file, or "MERGE" a relative file with the program in memory, Basic Aid will return a No Range Error.

6. String Too Long Error

The String Too Long error normally occurs if you try to use a disk command with a file name longer than the 16 characters Commodore's BASIC allows. For example, if you enter: **READ "123456789 1234567"**, Basic Aid will return a String Too Long Error.

7. Syntax Error

A Basic Aid Syntax Error occurs for the same reasons a BASIC Syntax Error occurs. "SYNTAX ERROR" will appear if you misspell a command word, for example **REED "FILE"**, or misuse a command, such as **AUTO "FILENAME"**.

BASIC AID COMMAND SUMMARY

1. Commands

- ASCII** - Defines printer as ASCII or Commodore
- AUTO** - Turns automatic line numbering on and off
- CATALOG** - Displays the directory of a disk
- CHANGE** - Finds and replaces one string with another
- CLEAR** - Cancels all tab stops
- COLOR** - Changes the border, screen and text colors
- CRT** - Prints a hard copy of the contents of a screen
- DEL** - Deletes a specified range of BASIC program lines
- DISK** - Prints the disk status or introduces BASIC 2.0 disk commands
- DUMP** - Displays the current values for defined variables
- DRUN** - Loads a BASIC program from disk and runs it automatically
- FIND** - Searches for a string and displays the lines where it occurs
- GET** - Loads a program from disk
- HELP** - Displays the line where a programming error occurs
- HEX** - Converts numbers from one base to another
- KEY** - Defines the key for the key print feature
- KILL** - Disables RTC Basic Aid
- LF** - Turns line feeds on or off
- LS** - Turns leading spaces on or off
- MERGE** - Merges BASIC program in memory with one from disk
- MOVE** - Relocates a range of BASIC program lines

NUM - Renumbers all or part of a BASIC program
OLD - Restores a program to memory after "NEW"
PLIST - Lists a program to the printer
READ - Reads a sequential or user file to the screen
RESET - Returns the computer to power-up condition
SIZE - Gives the size of program in memory or on the disk
STATUS - Displays the current values for the printer
TRACE - Top 2 screen lines display BASIC line being executed

2. Features

Scroll a program listing at either top or bottom of the screen

Load first program on disk with <SHIFT> and <RUN/STOP>

Set tabs with <f 1> and <f 2>

Clear from cursor to end of line with <f 3>

Clear from beginning of line to cursor with <f 4>

Insert text with <f 5>

Move cursor to first position of last screen line with <f 7>

Escape quote mode with <f 8>

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 29, 1983
PRODUCT: DRAFT-AID CAD SYSTEM
VERSION: 1.1
COMPUTER: COMMODORE 8000 SERIES

(416) 884-4165

PRODUCT DESCRIPTION:

The Draft-Aid Computer Aided Design System is one of the newest CAD Systems, and is designed for microcomputer operation. Draft-Aid goes from hand drawing to plotter quickly and easily through four user-friendly steps:

- 1) The MATRIX EDITOR lets you specify where you want the drawing to appear on the plotter's board.
- 2) The SEGMENT EDITOR is then used to draw on the screen the shapes that will appear in the final drawing.
- 3) The RELATION FILE EDITOR combines the drawing's shapes with their positions.
- 4) The RELATION FILE PLOTTER then performs the actual plot with one instruction, leaving the operator free to proceed to other work.

PLOT FEATURES INCLUDE:

- ** creating arcs and circles
- ** rotating drawings through 360 degrees
- ** moving drawings anywhere on the plot surface
- ** enlarging or reducing drawings in either axis
- ** invert any drawing in either axis
- ** drawing up to 9,801 shapes with one instruction

DATA ENTRY FEATURES INCLUDE:

- ** operational and error alarms
- ** full error checking - user and disk
- ** "escape" function to cancel last command
- ** fully menu-driven programs for ease of use
- ** built-in calculator, cross-referencing, file sorting
- ** formatted screen displays and many other features

COMPLETE DISK MAINTENANCE:

- ** catalog, backup, copy, delete, format routines
- ** powerful pattern matching system

APPLICATIONS:

- ** educational use
- ** printed circuit boards
- ** electronic drafting

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: SCRATCHPAD 64
VERSION: 2.0
COMPUTER: COMMODORE 64

(416) 884-4165

PRODUCT DESCRIPTION:

Scratchpad 64 is a database/mail list program for the Commodore 64. It is fully C64-LINK compatible and suitable for both single and dual disk drives. Scratchpad data can be merged with Script 64 Word Processor data to produce hundreds of letters from a single document.

FEATURES INCLUDE:

- * Formats disk in series of Screens
- * Each Screen has 20 lines with up to 30 characters on any one line
- * Each line used for a different type of data
- * Continuous display of line definitions
- * Screens stored in alphabetic or numeric order around single, selected line
- * Global search on any line
- * Use parallel or serial printers
- * IEEE printers (with C64-LINK)
- * Print labels, envelopes, mail lists
- * Backup feature with single disk drive
- * Continuous record number display

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS

10610 BAYVIEW AVENUE

RICHMOND HILL, ONTARIO

CANADA L4C 3N8

DATE: AUGUST 25, 1983

PRODUCT: SUPERBASIC 64

VERSION: 1.0

(416) 884-4165

COMPUTER: COMMODORE 64

PRODUCT DESCRIPTION:

SuperBASIC for the Commodore 64 gives you three different versions of Commodore BASIC programming language Version 4, plus a built-in machine language monitor.

BASIC 4.0

- * Disk Maintenance Commands:
 - header, collect, backup, catalog
- * File Maintenance Commands:
 - copy, concat, rename, scratch
- * Data Handling Commands:
 - append, dopen, dclose, dload, dsave, record
- * Full string handling and garbage collection

BASIC 4.1 - GRAPHICS PLUS BASIC

- * All the features of BASIC 4.0
- * Three graphics modes
- * Extra graphics commands
 - draw, box, locate, color, scale

BASIC 4.2 - EXTENDED BASIC

- * Fully compatible with Commodore's "B" series
- * Full error trapping commands
 - trap, resume, err\$, er, el
- * Load and save binary files
 - bload, bsave, brun
- * Function keys display BASIC commands or may be user-defined
- * Extra BASIC commands
 - else, print using, dispose, drun, dclear

MACHINE LANGUAGE MONITOR

- * display and alter 64's memory
- * calls or breaks to monitor

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS

10610 BAYVIEW AVENUE

RICHMOND HILL, ONTARIO

CANADA L4C 3N8

DATE: AUGUST 25, 1983

PRODUCT: SUPERCOPY 64

VERSION: 1.0

COMPUTER: COMMODORE 64

(416) 884-4165

PRODUCT DESCRIPTION:

SuperCopy is a disk utilities program for the Commodore 1541 disk drive. Many disk operations are normally very difficult or time-consuming on a single drive. SuperCopy is extremely fast. The SuperCopy disk maintenance package reduces the time spent for a BACKUP on a single disk drive to about 7 minutes.

The program is menu-driven and very user-friendly, with frequent on-screen prompts and an attractive screen.

* Complete Disk Maintenance Commands

- Header
- Backup
- Copy
- Scratch
- Rename
- Catalog

* Complete pattern matching

* Full prompts

- * Continuous displays of disk status, unit numbers and blocks free
- * Change unit address to use 2 single drives
- * Arrange files in alphabetical order or rearrange them in any order
- * Check disk speed feature

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: VICSCRIPT
VERSION: 1.0
COMPUTER: VIC-20

(416) 884-4165

PRODUCT DESCRIPTION:

VicScript is Richvale Telecommunications' word processor for the Commodore VIC-20. VicScript is similar in operation and appearance to Richvale Telecommunications' word processors, Script 64 and RTC 4. Data created with VicScript is compatible with those word processors. The program is installed in ROM chips on VIC RAM cartridges, leaving the VIC's memory free for word processing data.

EDITING FEATURES:

- * Full screen cursor editing
- * Insert/Delete letters, words, lines, sentences
- * Text movement
- * Tabs, user-created index

PRINTING FEATURES:

- * Parallel and serial printers
- * IEEE printers (with V-LINK)
- * Format commands not embedded in text
- * Underlining, Bold print
- * Superscripts, subscripts

SPECIAL FEATURES:

- * Tape or disk storage
- * V-LINK compatible

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: SPACE GUNNER
VERSION: 1.0
COMPUTER: COMMODORE 64

(416) 884-4165

PRODUCT DESCRIPTION:

Space Gunner is an exciting new video arcade-style game for the Commodore 64. The object of the game is to defend the planet Namcap against the fleet of the Warlords of Zorlon.

The screen shows the display from inside the cockpit of an attack ship. Using a joystick, the pilot of the ship aims his gunsight and fires to destroy the approaching Zorlons. The control panel at the bottom of the screen gives continuous readouts of both fuel and scores. As the player's ship absorbs energy from exploding Zorlon ships, the fuel counter rises. But as the game moves on, the level of difficulty rises.

- * Joystick control
- * Continuous display of score and fuel
- * Arcade sound effects and music
- * Current high score displayed
- * C64-LINK compatible
- * Escalating difficulty

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: V-LINK 20-2
VERSION: 1.0
COMPUTER: VIC-20

(416) 884-4165

PRODUCT DESCRIPTION:

The V-LINK 20-2 is a cartridge that plugs into the back of the VIC-20 and expands it to the power of a much larger computer. It is similar to Richvale Telecommunications' C64-LINK. Unlike the V-LINK, the V-LINK 20-2 is available as a separate cartridge and does not involve the expense of a VIC RAM Expansion Cartridge.

FEATURES INCLUDE:

INPUT/OUTPUT

- * Serial, parallel, IEEE
- * Use Commodore dual disk drives
- * Parallel printers

BASIC 4.0

- * Adds Commodore's BASIC version 4.0
- * 16 DOS commands added: header, copy, catalog, dopen, dclose, rename, scratch, and so on

MONITOR

- * Built-in machine language monitor
- * View and alter 64's memory
- * Write machine language programs

MODEM

- * Built-in modem program

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: COLOR 80
VERSION: 1.0
COMPUTER: COMMODORE 64

(416) 884-4165

PRODUCT DESCRIPTION:

COLOR 80 turns the Commodore 64 into an 80-column computer, without the expense of extra cartridges or boards.

FEATURES INCLUDE:

- * 80-column display makes programming in BASIC easier
- * requires no extra boards or cartridges much less expensive
- * uses no BASIC memory in the 64
- * use Hires screen for display
- * create and run 80-column programs
- * works with terminal programs

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: AUGUST 25, 1983
PRODUCT: C64-LINK
VERSION: 5.0
COMPUTER: COMMODORE 64

(416) 884-4165

PRODUCT DESCRIPTION:

The C64-LINK is a IEEE cartridge that provides your Commodore 64 with a number of characteristics and features normally found on the more expensive PET/CBM series of microcomputers.

FEATURES INCLUDE:

INPUT/OUTPUT

- * Serial, parallel, IEEE
- * Use Commodore dual disk drives
- * Parallel printers

BASIC 4.0

- * Adds Commodore's BASIC version 4.0
- * 16 DOS commands added: header, copy, catalog, dopen, dclose, rename, scratch, and so on

MONITOR

- * Built-in machine language monitor
- * View and alter 64's memory
- * Write machine language programs

MODEM

- * Built-in modem program

DAISY-CHAINING FEATURE

- * Network up to 8 64's to one printer and one disk drive

RELOCATABLE

- * Move the LINK around in memory to use more software, run bigger BASIC programs

PRODUCT SPECIFICATION SHEET

RICHVALE TELECOMMUNICATIONS
10610 BAYVIEW AVENUE
RICHMOND HILL, ONTARIO
CANADA L4C 3N8

DATE: OCTOBER 26, 1983

PRODUCT: MULTI-LINK

VERSION: PROTOTYPE

(416) 884-4165

COMPUTER: COMMODORE 64

PRODUCT DESCRIPTION:

The RTC Multi-LINK is a networking system for the Commodore 64. Multi-LINK allows up to 64 computers to chain to the same printer and disk drive, while also allowing one MASTER computer to control and monitor activities on the SATELLITE computers.

Each computer in the chain must be equipped with the Multi-LINK cartridge. All SATELLITE computers in the chain are assigned a number using dipswitch settings on the cartridge.

FEATURES INCLUDE:

- * Commands spooled to printer and disk drive
- * Work with BASIC or machine language programs
- * Send messages to and from any computer
- * MASTER computer has full control over all SATELLITES with these commands:

DISALLOW	prevents any or all SATELLITES from sending a command to the disk drive or printer or both
ALLOW	enables a DISALLOWed command
CATALOG	the disk drive
LOAD	program from disk or from a SATELLITE
LIST	the program in memory
QUERY	prevents a SATELLITE from using the disk or printer until OK'd from MASTER
SAVE	program to disk or send it to SATELLITE
SCREEN	reads any SATELLITE's screen to the MASTER screen
SEND	a message or command to any SATELLITE
RESET	any SATELLITE

***** RTC BASIC AID 64 *****

OWNER'S REGISTRATION

Date: D M Y Version 3.0

Name: _____

Address: _____

City: _____

State/Prov: _____

Comments: _____

Please send to: Richvale Telecommunications
10610 Bayview Ave. Unit 7
Richmond Hill, Ontario
L4C 3N8

Tel. (416) 884-4165

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU

THE UNIVERSITY OF MICHIGAN LIBRARY
ANN ARBOR, MICHIGAN 48106-1000
TEL: 734-763-1000
FAX: 734-763-1000
WWW: WWW.LIBRARY.MICHIGAN.EDU



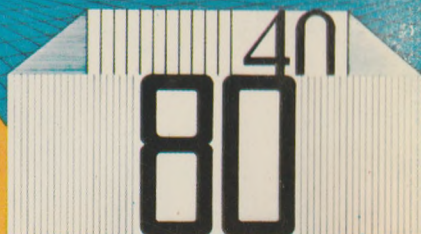
SCRIPT 64

A Word Processor For The Commodore 64



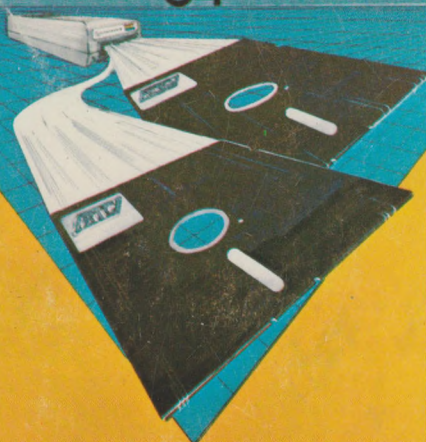
**RICHVALE
TELECOMMUNICATIONS**

COLOR 80



**RICHVALE
TELECOMMUNICATIONS**

SUPER COPY 64



**RICHVALE
TELECOMMUNICATIONS**

C64 LINK



**RICHVALE
TELECOMMUNICATIONS**